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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,060	09/07/2005	Glyn Wilfred Turner	032899-024	2716

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BUCHANAN, INGERSOLL & ROONEY PC  
POST OFFICE BOX 1404  
ALEXANDRIA, VA 22313-1404

EXAMINER

BASICHAS, ALFRED

ART UNIT

PAPER NUMBER

3749

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/534,060

**Applicant(s)**

TURNER ET AL.

**Examiner**

Alfred Basichas

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/6,9/7/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed May 6, 2005, fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered, with the exception of the US reference.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 14 recites the limitation "the straight portion" in the 3<sup>rd</sup> line. There is insufficient antecedent basis for this limitation in the claim.

4. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "for example" renders the claim indefinite

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because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-6, 14-17, and 20 (claim 14 as understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Shimadzu (JP200146864), which shows all of the claimed limitations including, among other things,

1. An indirect heater assembly comprising a radiant tube heater 3, and air flow generating means 8,9 arranged to generate an air flow over the radiant tube heater so as to provide convected heating.

2. An indirect heater assembly according to claim 1, in which the heater assembly is located within a housing 1.

3. An indirect heater assembly according to claim 2, in which the housing has a wall around the radiant tube heater so as to constrain the air flow over the tube heater, the wall defining an air flow pathway over the heater and an outlet to direct the hot air to the surroundings (see at least fig. 1).

4. An indirect heater assembly according to claim 3, in which the housing further includes a heating duct 13 which is connected to the outlet so as to direct hot air to a particular part of the surroundings.

5. An indirect heater assembly according to claim 1, in which the radiant tube heater comprises an elongate tube 3.

6. An indirect heater assembly according to claim 1, in which the indirect heater assembly comprises a spiral tube 3 provided at an end of the radiant tube heater.

14. An indirect heater assembly according to claim 1, in which the air flow generating means 12 is located close to the connection between the spiral portion 3 and the straight portion 6 so as to cool the connection in use.

15. An indirect heater assembly according to claim 1, in which the assembly includes means for removing the products of combustion from the heater tube 11,13.

16. An indirect heater assembly according to claim 15, in which the removing means includes an exhaust duct 11 located in fluid communication with the heater tube 3 so as to direct gaseous combustion products away from the surrounding

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environment.

17. An indirect heater assembly according to claim 16, in which the exhaust duct 11 is located at an open end of the heater tube.

20. An indirect heater assembly according to claim 1, in which the assembly includes a fresh air inlet duct 6,7 which supplies air to the radiant tube heater.

### ***Claim Rejections - 35 USC § 102/103***

7. Claims 15, 13, 15-17, and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the referenced cited in the international search report as applied in applicant's international application no. PCT/GB03/04818.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 7-12 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimadzu (JP200146864) in view of Romero (5,487,423). Shimadzu discloses substantially all of the claimed limitations, but does not specifically recite:

7. An indirect heater assembly according to claim 6, in which the spiral tube preferably comprises a straight portion and a spiral portion downstream of the straight portion and arranged around the straight portion.

8. An indirect heater assembly according to claim 7, in which the spiral portion is arranged coaxially around the straight portion.

9. An indirect heater assembly according to claim 7, in which the radiant tube heater is connected to the straight portion of the spiral tube by a U-shaped tube.

10. An indirect heater assembly according to claim 7, in which the spiral portion is made from a flexible material to enable it to be wrapped around the straight portion.

21. A radiant tube heater, the heater having a heater tube, the tube having a straight portion and a spiral portion arranged around the straight portion.

22. A radiant tube heater according to claim 21, in which the spiral portion is arranged substantially co-axially around the straight portion.

Romero teaches the claimed tube arrangement in a heat exchanger, which is how the burner tube of Shimadzu acts. The particular arrangement is beneficial in terms of spatial orientation for the desired application. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Romero's

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teaching of the tube arrangement into the invention disclosed by Shimadzu, so as to provide for the desired application.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimadzu (JP200146864), which discloses substantially all of the claimed limitations.

Shimadzu does not specifically recite:

13. An indirect heater assembly according to claim 1, in which air flow generating means comprises an impeller to draw air over the radiant heater tube or to blow air over the radiant heater tube.

Official Notice is given that a blower is old and well known in the art. Such an arrangement has the clear and obvious benefit of providing for increased airflow.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a blower into the invention disclosed by Shimadzu, so as to provide for increased airflow. In addition, the use of a blower provides for greater control of the airflow and therefore would have been obvious to one of ordinary skill in the art to incorporate the a blower to enhance airflow over the heater tube disclosed by Shimadzu, so as to provide greater control.

13. Claims 18 and 25 (as understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimadzu (claim 18) and Shimadzu in view of Romero (claim 21).

Shimadzu and Shimadzu in view of Romero, disclose substantially all of the claimed limitations, but do not specifically recite:

18. An indirect heater assembly according to claim 2, in which housing includes wheels located at one or both ends.

25. A radiant tube heater according to claim 21, in which the heater includes means, for example wheels located at one or both ends.

Official Notice is given that the use of wheels on a structure is old and well known in the art. Such an arrangement has the clear and obvious benefit of providing for

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convenience in mobility. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate wheels into the invention disclosed by Shimadzu or Shimadzu in view of Romero, so as to provide for convenience in mobility.

14. Claims 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimadzu (claim 19) and Shimadzu in view of Romero (claim 26), and further in view of Eaves (EP1217294). Shimadzu and Shimadzu in view of Romero disclose substantially all of the claimed limitations, but do not specifically recite:

19. An indirect heater assembly according to claim 1, in which the radiant tube heater has a mesh burner head.

26. A radiant tube heater according to claim 21, in which a mesh burner head is provided.

Eaves teaches a radiant tube burner including a mesh burner head. Eaves teaches that such an arrangement provides for reduced turbulence downstream of the burner head. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the mesh burner head arrangement taught by Eaves into the invention disclosed by Shimadzu or Shimadzu in view of Romero, so as to provide for reduced turbulence downstream of the burner head.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alfred Basichas whose telephone number is 571 272 4871. The examiner can normally be reached on Monday through Friday during regular business hours.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached on 571 272 4828. The fax phone numbers for the organization where this application or proceeding is assigned are 571 273 8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center telephone number is 571 272 3700.

August 24, 2006



Alfred Basichas  
Primary Examiner